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UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF ILLINOIS
EASTERN DIVISION

Radiation Stabilization Solutions LLC,

Plaintiff,

v.

Brainlab AG & Brainlab, Inc.,

Defendant,

Elekta, Inc.,

Defendant.

No. 11 C 6462

No. 11 C 7702

Judge Ruben Castillo

MEMORANDUM OPINION AND ORDER

Radiation Stabilization Solutions LLC ("RSS") brings two separate actions for infringement of the same patent, one against Brainlab AG and Brainlab, Inc. ("Brainlab"), and one against Elekta, Inc. ("Elekta") (collectively, "Defendants"). For the convenience of the Court, and because the disputed terms and proposed constructions are so similar between the two cases, the parties agreed to a joint *Markman* hearing, which took place on August 27, 2012. Presently before the Court are the parties' proposed constructions of disputed claim terms. (Brainlab R. 55, Defs.' Br.; Brainlab R. 56, Pl.'s Resp.; Elekta R. 77, Def.'s Br.; Elekta R. 80, Pl.'s Resp.) The terms are construed as set forth below. This order will apply to both cases, *Radiation Stabilization Solutions LLC v. Brainlab*, No. 11 C 6462, and *Radiation Stabilization Solutions LLC v. Elekta AB*, No. 11 C 7702.

RELEVANT FACTS

On January 6, 1999, Leonard Reiffel (“Reiffel”) filed patent application No. 09/225,940 entitled “System to Stabilize an Irradiated Internal Target.” (Brainlab R. 54, J.A., Ex. 2 at 012.) In June of 2000, the United States Patent and Trademark Office issued a Notice of Allowability allowing all 15 claims in Reiffel’s patent. (*Id.* at 039-40.) Patent number 6,118,848 (“the ‘848 Patent”) was issued on September 12, 2000, and contained one independent and fourteen dependent claims. (Brainlab R. 54, J.A., Ex. 1.)

PROCEDURAL HISTORY

On September 15, 2011, RSS initiated a patent infringement action against Brainlab and various other parties, including Elekta. (Brainlab R. 1, Compl.) On November 28, RSS filed an amended complaint naming only Brainlab as the defendant. (Brainlab R. 8, Am. Compl.) Brainlab filed an answer, (Brainlab R. 19, Answer), and subsequently an amended answer and counterclaims, alleging affirmative defenses and seeking declaratory judgments that Brainlab does not infringe (Count I) and that the patent is invalid (Count II). (Brainlab R. 41, Am. Answer & Countercl.)

On October 28, 2011, RSS initiated a patent infringement action against Elekta and various other parties. (Elekta R. 1, Compl.) On November 30, RSS filed an amended complaint, (Elekta R. 8, Am. Compl.), and on December 29, Elekta filed an answer and counterclaims, (Elekta R. 23, Answer & Countercl.). On January 3, 2012, Elekta filed an amended answer and counterclaims alleging various affirmative defenses and seeking declaratory judgments that Elekta does not infringe (Count I), that the patent is invalid (Count II), and for reimbursement of attorneys’ fees, costs, and expenses (Count III). (Elekta R. 32, Am. Answer & Countercl.)

Presently before the Court are the parties' briefs supporting their proposed constructions of several claim terms in the '848 Patent. (Brainlab R. 55, Defs.' Br.; Brainlab R. 56, Pl.'s Resp.; Brainlab R. 57, Defs.' Reply; Elekta R. 77, Def.'s Br.; Elekta R. 80, Pl.'s Resp.; Elekta R. 81, Def.'s Reply.)

LEGAL STANDARD

An infringement action proceeds in two steps. *Schindler Elevator Corp. v. Otis Elevator Co.*, 593 F.3d 1275, 1281 (Fed. Cir. 2010). First, a court must engage in a claim construction analysis to determine the meaning and scope of the patent claims asserted to be infringed. *Id.* The second step centers on a comparison of the properly construed claims to the device accused of infringing. *Id.* At this stage of the present infringement action, the Court focuses on the first step of the analysis.

In proceeding with a claim construction analysis, the Federal Circuit has made clear that "the claims of a patent define the invention to which the patentee is entitled the right to exclude." *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005). Thus, courts must begin their claim construction analysis with the words of the claim. *Nystrom v. TREX Co., Inc.*, 424 F.3d 1136, 1142 (Fed. Cir. 2005). The words of the claim are generally given their "ordinary and customary meaning," which is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention. *Id.* The person of ordinary skill in the art would view the claim term in light of the entire intrinsic record. *Id.* Thus, the claims "must be read in view of the specification, of which they are a part." *Id.* (quoting *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 979 (Fed. Cir. 1995) (en banc)).

In situations where the intrinsic record suffices to resolve any ambiguity in the disputed

claim term, it is improper to rely on extrinsic evidence. *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1583 (Fed. Cir. 1996). If the intrinsic record fails to resolve ambiguities, a court can then rely upon extrinsic evidence, which “consists of all evidence external to the patent and prosecution history, including expert and inventor testimony, dictionaries, and learned treatises.” *Phillips*, 415 F.3d at 1317. While the Federal Circuit has noted that a court may consider extrinsic evidence, it has cautioned that “undue reliance on extrinsic evidence poses the risk that it will be used to change the meaning of claims in derogation of the ‘indisputable public records consisting of the claims, the specification and the prosecution history,’ thereby undermining the public notice function of patents.” *Id.* at 1319 (internal quotation marks omitted). A court may not rely on extrinsic evidence when the available intrinsic evidence unambiguously describes the scope of the invention, *N. Telecom Ltd. v. Samsung Elecs. Co., Ltd.*, 215 F.3d 1281, 1288 (Fed. Cir. 2000), or to vary or contradict the clear meaning of terms in the claims, *Altiris, Inc. v. Symantec Corp.*, 318 F.3d 1363, 1369 (Fed. Cir. 2003).

CLAIM CONSTRUCTION

I. Preamble to claim 1

First, Defendants ask the Court to construe the preamble to the first claim, “a stabilizing system comprising.” Brainlab contends that the term “stabilizing system” in the preamble imparts meaning to claim 1, particularly in light of the purpose of the invention as described in the specification. (Brainlab R. 55, Defs.’ Br. at 10.) Both Brainlab and Elekta, relying on *Catalina Marketing International, Inc. v. Coolsavings.com, Inc.*, 289 F.3d 801, 808 (Fed. Cir. 2002), argue that the preamble is “necessary to give life, meaning and vitality” to claim 1. (Brainlab R. 55, Defs.’ Br. at 11, 13; Elekta R. 81, Def.’s Reply at 4.)

Brainlab's proposed construction of "a stabilizing system comprising" is: "a system in which the motion of a target volume during therapeutic irradiation is countered by moving the target volume during therapeutic irradiation to maintain it in the desired position relative to a therapeutic irradiating beam." (Brainlab R. 55, Defs.' Br. at 10.) Elekta's proposed construction of "stabilizing" is simpler but similar: "countering the motion of a target volume within a body during therapeutic irradiation by moving the body so that the target stays at the desired location relative to the treatment beam." (Elekta R.77, Def.'s Br. at 11.) Defendants draw attention to how many times the term "stabilize" or "stabilizing" is used throughout the patent. (Brainlab R. 55, Defs.' Br. at 11-12; Elekta R. 77, Def.'s Br. at 12-13.) They argue that "stabilizing" constitutes a claim limitation because it is "emphasized in the written description and prosecution, but not mentioned in the body of the claim." (Elekta R. 77, Def.'s Br. at 12) (citing *Computer Docking Station Corp. v. Dell, Inc.*, 519 F.3d 1366 (Fed. Cir. 2008)).

Defendants also argue that the stabilization must occur in the presence of an irradiating beam. (Brainlab R. 55, Defs.' Br. at 13; Elekta R. 55, Def.'s Br. at 13-14.) They contend that the "entire point of the system, as reflected in the title of the patent," is to stabilize during irradiation. (Elekta R. 81, Def.'s Reply at 4.) Brainlab cites Rieffel's deposition testimony to support the contention that "moving the patient or body when the beam is on is 'one of the major features' of his invention." (Brainlab R. 57, Defs.' Reply) (quoting Brainlab R. 55, Defs.' Br., Ex. 4, Reiffel Dep.)

RSS urges the Court to rely on *Catalina* as well, claiming that "claim 1 'defines a structurally complete invention in the claim body and uses the preamble only to state a purpose or intended use for the invention.'" (Elekta R. 80, Pl.'s Resp. at 6) (quoting *Catalina*, 289 F.3d at

808). RSS argues that the preamble is not limiting because it “was not relied on during prosecution to distinguish it from prior art,” and because the system is described in claim 1 in complete structural detail. (Brainlab R. 56, Pl.’s Resp. at 7.) RSS contends that the preamble “merely recites an intended use,” (*id.*), and that it is “merely duplicative of the limitations in the body of the claim.” (Elekta R. 80, Pl.’s Resp. at 7) (quoting *Am. Med. Sys. v. Biolitec, Inc.*, 618 F.3d 1354, 1359 (Fed. Cir. 2010)).

RSS also argues that Defendants mischaracterize the “key to the invention.” (Brainlab R. 56, Pl.’s Resp. at 8.) Rather than *stabilization* in the presence of therapeutic irradiation, “[t]he key for this invention is that imagers can be chosen so that an imager will not be confounded by other radiation present.” (*Id.*) (quoting ‘848 Pat. at 3:65-67). RSS contends that “[w]hile [stabilization during irradiation] may be an intended purpose or use of the disclosed invention, it should not be a limitation.” (Elekta R. 80, Pl.’s Resp. at 8.) RSS thus contends that there is nothing in claim 1 to support the limitation that the system only operate during therapeutic irradiation, and that, even if there was, it would be more appropriately addressed in the context of the imager in the claim than the preamble. (*Id.*) RSS additionally contends that Brainlab’s reliance on Reiffel’s testimony is disproportionate. (Brainlab R. 56, Pl.’s Resp. at 9.) (quoting *Markman*, 52 F.3d at 991 n.3; *Solomon v. Kimberly-Clark Corp.*, 216 F.3d 1372, 1380 (Fed. Cir. 2000)). RSS emphasizes that the movement of the body is in relation to external coordinates, not an irradiating beam, and that the claim does not require a treatment beam at all. (Elekta R. 80, Pl.’s Resp. at 8-9.)

In general, a preamble is construed as a limitation “if it recites essential structure or steps, or if it is necessary to give life, meaning, and vitality to the claim.” *Catalina*, 289 F.3d at 808

(internal citation and quotation marks omitted). A preamble is not limiting, however, “where a patentee defines a structurally complete invention in the claim body and uses the preamble only to state a purpose or intended use for the invention” or to provide “context for what is being described in the body of the claim.” *Symantec Corp. v. Computer Assocs. Int’l, Inc.*, 522 F.3d 1279, 1288 (Fed. Cir. 2008). Indeed, “a preamble generally is not limiting when the claim body describes a structurally complete invention such that deletion of the preamble phrase does not affect the structure or steps of the claimed invention.” *Catalina*, 289 F.3d at 809.

“In considering whether a preamble limits a claim, the preamble is analyzed to ascertain whether it states a necessary and defining aspect of the invention, or is simply an introduction to the general field of the claim.” *On Demand Mach. Corp. v. Ingram Indus.*, 442 F.3d 1331, 1343 (Fed. Cir. 2006); *accord Hearing Components, Inc. v. Shure Inc.*, 600 F.3d 1357, 1366 (Fed. Cir. 2010). “Absent clear reliance on the preamble in the prosecution history, or in situations where it is necessary to provide antecedent basis for the body of the claim, the preamble generally is not limiting.” *Symantec*, 522 F.3d at 1288 (internal citation and quotation marks omitted).

Whether to treat a preamble as a claim limitation is determined on the facts of each case in light of the claim as a whole and the invention described in the patent. *Storage Tech. Corp. v. Cisco Sys., Inc.*, 329 F.3d 823, 831 (Fed. Cir. 2003). In *Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298 (Fed. Cir. 1999), the Federal Circuit addressed the circumstances under which construction of the preamble to a claim would be appropriate:

If the claim preamble, when read in the context of the entire claim, recites limitations of the claim, or, if the claim preamble is “necessary to give life, meaning, and vitality” to the claim, then the claim preamble should be construed as if in the balance of the claim . . . If, however, the body of the claim fully and intrinsically sets forth the complete invention, including all of its limitations, and the preamble offers

no distinct definition of any of the claimed invention's limitations, but rather merely states, for example, the purpose or intended use of the invention, then the preamble is of no significance to claim construction because it cannot be said to constitute or explain a claim limitation.

Id. at 1305. The court concluded in that case that the preamble was necessary to give "life, meaning and vitality" to the claim because the preamble's statement that it claimed a method or apparatus that produced "an image of generated shapes made up of spots" was not merely a statement describing the invention's intended field of use. *Id.* at 1306. Instead, the court held, the statement was "intimately meshed" with the language of the claim. *Id.*

Elekta and Brainlab argue that stabilization is the entire purpose of the invention and is ubiquitous within the specification but absent from the body of the claim. (Brainlab R. 55, Defs.' Br. at 11-12; Elekta R. 77, Def.'s Br. at 12.) Terms in a patent are generally given their "ordinary and customary meaning," which is the meaning the terms would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application. *Phillips*, 415 F.3d at 1312-13. In some cases, "the ordinary meaning of claim language as understood by a person of skill in the art may be readily apparent even to lay judges, and claim construction in such cases involves little more than the application of the widely accepted meaning of commonly understood words." *Id.* at 1314 (citing *Brown v. 3M*, 265 F.3d 1349, 1352 (Fed. Cir. 2001)).

Where the ordinary meaning is readily apparent, the Federal Circuit has noted that general purpose dictionaries may be helpful in construing a claim term. *Id.*; see *Vitronics*, 90 F.3d at 1584 n.6 (Judges may "rely on dictionary definitions when construing claim terms, so long as the dictionary definition does not contradict any definition found in or ascertained by a reading of the

patent documents.”). Here, the Court finds that the term “stabilizing” in the preamble has a readily apparent meaning. Thus, it is proper for the Court to consult a general purpose dictionary. The dictionary defines stabilizing as “to make stable.”¹ The appropriate definitions of stable are: “placed so as to resist forces tending to cause motion or change of motion;” and “designed so as to develop forces that restore the original condition when disturbed from a condition of equilibrium or steady motion.” The only language in the body of the claim that refers to motion is “the actuator sub-system being driven by the control output signal to move the body.” ‘848 Pat. at cl. 1. This language does not indicate to what end the sub-system will move the body, nor for what purpose. The specification makes clear that a key element of the invention is not its simple ability to move the body, but its more specific ability to move the body in a way that will stabilize the target volume relative to external coordinates. *See, e.g.*, ‘848 Pat. at 1:57-61 (disclosing “a system which images markers located in a body and moves the body to stabilize the position of a target volume in the body”); *id.* at 2:10-14 (the function of the actuator sub-system is to “stabilize the position of the target volume relative to the external coordinates”); *id.* at 3:43-46 (the actuator subsystem moves the body to counter motion of the target volume “thus stabilizing the target volume relative to the external coordinates”); *id.* at 5:46-49 (the actuator sub-system can “counter the translation and rotation to stabilize the target volume relative to external coordinates”). “‘Stabilizing’ provides the context necessary to understand the other structural elements in the claim.” (Elekta R. 81, Def.’s Reply at 4.) Without the preamble, this feature disappears from claim 1 and, because claim 1 is the only independent claim, from the

¹ The Court used the Merriam-Webster Online Dictionary, located at <www.m-w.com> and last accessed by the Court on October 3, 2012. The Court also consulted the *American Heritage Dictionary* 1186 (2d ed. 1982).

entire invention. Therefore, the Court agrees with Defendants that the preamble is “necessary to give life, meaning and vitality” to the claim, *Catalina*, 289 F.3d at 808, and that therefore the preamble is a limitation on claim 1.

However, the Court also agrees with RSS that Defendants’ proposed constructions add limitations that are not present in the patent. Defendants ask the Court to read the limitations “during therapeutic irradiation” and “stays at the desired location relative to the treatment beam” into the word “stabilizing.” “Stabilizing,” given its ordinary meaning as defined above, has nothing to do with therapeutic irradiation, and Defendants have not provided an alternate definition that might include therapeutic irradiation or a compelling reason to depart from the ordinary meaning. *See CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed. Cir. 2002) (“An accused infringer may overcome this “heavy presumption” [that a claim term carries its ordinary meaning] and narrow a claim term’s ordinary meaning, but he cannot do so simply by pointing to the preferred embodiment or other structures or steps disclosed in the specification or prosecution history.”) (citing *Johnson Worldwide Assocs., Inc. v. Zebco Corp.*, 175 F.3d 985, 989-90, 992 (Fed. Cir. 1999)). Defendants suggest that stabilizing the body during irradiation is what distinguishes the invention from prior art. (Brainlab R. 55, Defs.’ Br. at 2; Elekta R. 77, Def.’s Br. at 13.) The patent itself, however, states that what distinguishes the patent from prior art is “a system which images markers located in a body and moves the body to stabilize the position of a target volume in the body.” ‘848 Pat. at 1:57-61. While the specification frequently refers to the invention’s ability to image markers in the presence of high-intensity radiation, the specification is very clear that the stabilization of the body is in reference to external coordinates, not a therapeutic beam. As RSS emphasizes, the invention involves “mov[ing] the body and

stabiliz[ing] the target volume relative to external coordinates.” ‘848 Pat. at 5:5-6; (Brainlab R. 56, Pl.’s Resp. at 9.) It is likely that these external coordinates will frequently be used to maintain the body’s position relative to the treatment beam, but that limitation is not found within the claim. The patent never indicates that the invention is limited to use during irradiation treatment.

The Court finds that the preamble gives life to the claim and thus requires construction. *See Catalina*, 289 F.3d at 808. However, while the preamble must be construed as part of the claim, the Court cannot accept Brainlab’s contention that the term “stabilizing system” somehow incorporates the limitation of “during therapeutic irradiation.” *See Teleflex, Inc. v. Ficosa N. Am. Corp.*, 299 F.3d 1313, 1326 (Fed. Cir. 2002) (“limitations from the specification are not to be read into the claims”). The Court thus construes the preamble to claim 1, “a stabilizing system,” as follows: a system which moves the body to counter motions of the target volume and maintain the target volume’s position relative to the external coordinates. *See* ‘848 Pat. at 2:53-55.

II. “markers . . .”

The first disputed phrase within claim 1 is “markers, the markers being located in a body, and the markers having a reference set of positions relative to external coordinates, the reference set of positions having a calibrated spatial relationship to the target volume in the body.” ‘848 Pat. at cl. 1. The parties agree on several characteristics of the markers: that they must be inside a body, that they must be foreign objects, and that the position of the markers is defined relative to external coordinates and also to the target volume. (*See, e.g.,* Elekta R. 77, Def.’s Br. at 14.) Departing from those agreements, each party suggests a different construction. Brainlab

proposes that the “markers . . .” term should be construed as: “a plurality of foreign objects implanted inside a patient, each object having a position relative to the target volume and external coordinates that is ascertained prior to imaging by the imager.” (Brainlab R. 55, Defs.’ Br. at 13.) Elekta proposes the construction: “a plurality of radio-opaque artificial objects located inside a patient with the location of each marker being defined by its three-dimensional coordinates relative to a coordinate system in the treatment room and the location of each marker also being defined relative to the location of a target volume.” (Elekta R. 77, Def.’s Br. at 14.) RSS proposes that the term means: “a plurality of foreign objects located within a body, each object having a position relative to the target volume and external coordinates.” (Brainlab R. 56, Pl.’s Resp. at 10.)

Elekta contends that the markers must be “radio-opaque,” or visible in images, because otherwise they could not serve as markers. (Elekta R. 77, Def.’s Br. at 14.) RSS argues that the language of the claim does not support this narrowing because the claim broadly discloses “markers” without disclosing any physical features the markers must have. (Elekta R. 80, Pl.’s Resp. at 10.) RSS further contends that the specification provides examples that are clearly outside the “radio-opaque” limitation Elekta imposes. (*Id.*) “For example, the specification explains that “[m]arkers can be chosen to have a contrast peak at the energy where the imager is most responsive.” (*Id.*) (quoting ‘848 Pat. at 4:22-24).

The Court first looks to the words of the claim and the specification to construe the contested terms. *Phillips*, 415 F.3d at 1314-15 (citations omitted). The Court rejects Elekta’s radio-opacity limitation. Nothing in the specification or the claim indicates that the markers must be visible. In fact, dependent claim 12 is an embodiment of claim 1 in which the imager is

an acoustic imager. ‘848 Pat. at cl. 12; 6:32-40. In this system, the markers would not need to be visible to fulfill their purpose of providing reference points.

Brainlab contends that the specification requires the markers to be implanted. (Brainlab R. 55, Defs.’ Br. at 14.) To support its claim that “the markers can be implanted by any method, as long as they are implanted,” (*id.*), Brainlab relies on the following language from the patent: “[t]he markers can be implanted in bodies for example by modified biopsy methods and by other implanting methods.” ‘848 Pat. at 3:8-10. Brainlab argues that because “[n]o other way of placing the markers in a patient is described or suggested in the ‘848 patent,” no other way is permissible. (Brainlab R. 55, Defs.’ Br. at 14.) RSS argues that internal markers do not necessarily need to be implanted, as Brainlab construes. (Brainlab R. 56, Pl.’s Resp. at 11.) It suggests that the markers could be injected, for example, so requiring them to be implanted is an improper limitation. (*Id.* at 12.) Additionally, RSS argues that, although both Defendants construed markers as being located within a patient, the patent only uses the word “body” and never refers to a patient. (*Id.*)

The Court rejects Brainlab’s importation of the term “implanted” into the claim. The Court finds that “being located in a body” has a readily apparent meaning and thus does not need to be construed. *See Phillips*, 415 F.3d at 1314. As RSS suggests, markers may be injected or placed into the body in any number of other ways that would not fall under the limitation of being implanted. Nothing in the language of the claim suggests that this is an appropriate limitation. *See Nystrom*, 424 F.3d at 1142. Finally, the Court finds no support in the claim or the specification for Defendants’ narrowing of “body” to “patient.” “Indeed, figure 1 clearly shows a body that would not be considered a ‘patient.’” (Brainlab R. 56, Pl.’s Resp. at 11.)

While the most frequent use of the invention may involve a patient, there is nothing in the claim or specification to support that limitation. Because the intrinsic evidence clearly supports RSS's assertion that "patient" is an inappropriate limitation, the Court does not need to look to extrinsic evidence. See *Koepnick Med. & Educ. Research Found., LLC v. Alcon Labs., Inc.*, 162 F. App'x 967, 972 (Fed. Cir. 2005); *Vitronics*, 90 F.3d at 1583.

Elekta contends that the term "external coordinates" requires the coordinates to be three-dimensional and within the treatment room because the context in which the invention is used requires the patient to be positioned within the three-dimensional coordinate system of the treatment room. (Elekta R. 77, Def.'s Br. at 15.) Additionally, Elekta contends that "to be useful in this patent, the defined coordinate system must encompass the space in which the patient is going to be treated." (*Id.* at 7.) To support its proposed construction, Elekta cites Reiffel's deposition testimony when he was asked what the term "marker" means:

Something that is visible by some means or other, not necessarily X-ray, by the way, that designates a specific location in the patient body relative, again, to three space, meaning X, Y and Z, where . . . the X, Y and Z space contains both the accelerator and the patient. So it's a shared set of coordinates.

(Elekta R. 77, Def.'s Br., Ex. 2, Reiffel Dep. at 90:23-91:7.) RSS argues that there is no support in the language of the patent to limit the external coordinate system to the "treatment room."

(Elekta R. 80, Pl.'s Resp. at 11.) RSS also contends that the coordinate system is not limited to being three-dimensional, citing claim 14 "wherein the actuator sub-system . . . has only one degree of freedom to move a body." (*Id.*) (quoting '848 Pat. at cl. 14). Elekta argues that even if the actuator only moves within one plane, as in claim 14, the three coordinates of the target still need to be known to accurately position it. (Elekta R. 81, Def.'s Reply at 5-6.) "If only the

left/right coordinates of markers, but not the up/down or back/front coordinates, are known, the location of the markers in space cannot be accurately determined.” (*Id.*)

Brainlab contends that the specification requires the markers’ positions to be calibrated before they are imaged. (Brainlab R. 55, Defs.’ Br. at 14.) Brainlab quotes the specification to support this proposition: “In order to establish a reference set of position of the markers relative to external coordinates, the positions of the markers relative to the target volume must be calibrated.” (*Id.*) (quoting ‘848 Pat. at 5:7-9). RSS takes issue with Brainlab’s construction because it requires that the calibration take place prior to the imaging. (Brainlab R. 56, Pl.’s Resp. at 11.) RSS argues that the calibration can happen at the same time the initial imager output signal is created because the reference set of positions can be the initial set of positions. (*Id.*)

The Court agrees with RSS that “an intended use for the disclosed invention is to compensate for the movement of a target volume within a body.” (Elekta R. 80, Pl.’s Resp. at 11.) However, the Court finds that in order to do so, the locations of the markers in space need to be determined. This “calibrated spatial relationship” requires three-dimensional coordinates, even if the target volume is only moving along one axis. If the purpose of the invention is to use markers within a three-dimensional body to provide information such that the movement of the body can be adjusted for, two-dimensional coordinates will not provide sufficient information. The specification supports this construction:

[T]he initial set of positions of the markers may have been translated, with components of the translation along three orthogonal axes. The initial set of positions also may have been rotated, with components of the rotation about the three orthogonal axes. And, the initial set of positions may have undergone a strain motion, with components of the strain along the three orthogonal axes.

‘848 Pat. at 5:38-45. Whether the coordinates are necessarily limited to the treatment room is not readily apparent from the claim. However, because the purpose of the external coordinates is to locate the markers within the body, ‘848 Pat. at 5:20-23, the Court concludes that the coordinate system must be within the same room as the body.

Language in the specification also makes clear that the spatial relationship referred to in claim 1 must be calibrated prior to imaging.

The calibration establishes a reference set of positions of the markers relative to the external coordinates and establishes the spatial relationship of the reference set of positions of the markers to the target volume. . . . [W]hen the imager images the set of positions of the markers at some initial time, the initial imager output signal will be functionally related to the reference set of positions (providing that the spatial relationship of the reference set of positions of the markers to the target volume has not changed in the time between the calibration and the initial time).

‘848 Pat. at 5:20-32. The “markers . . .” provision in claim 1 is construed as follows: a plurality of foreign objects located within a body, each object having a position defined by its three-dimensional coordinates relative to the target volume and the external coordinate system that is ascertained prior to imaging.

III. “an imager which . . . produces an initial imager output signal . . . at an initial time and . . . at a subsequent time”

The parties ask the Court to construe several terms in the “imager” provision within claim 1: “an imager which images the markers and produces a initial imager output signal which is functionally related to an initial set of positions of the markers relative to the external coordinates at an initial time and produces a subsequent imager output signal which is functionally related to a subsequent set of positions relative to the external coordinates at a subsequent time.” ‘848 Pat. at cl. 1.

A. imager

Elekta proposes that an imager is: “one or more devices located in the treatment room, which produce images of the markers in the presence of the therapeutic irradiating beam and produce both an initial imager output signal and a subsequent imager output signal.” (Elekta R. 77, Def.’s Br. at 15.) Similarly, Brainlab proposes that an imager is: “a device, including a radiation source and a radiation imager, that is positioned to generate images of the markers during radiation treatment of the target volume and that generates both an initial imager output signal and a subsequent imager output signal.” (Brainlab R. 55, Defs.’ Br. at 15.) Defendants contend that because “[t]he key for this invention is that imagers can be chosen so that an imager will not be confounded by other radiation present,” the imager must be located in the treatment room and thus cannot be the pre-treatment CT scanner used to calibrate the reference points. (*Id.* at 16) (quoting ‘848 Pat. at 3:65-67); *see also* (Elekta R. 81, Def.’s Reply at 8.) Elekta contends that the imager “cannot be the treatment planning imager, which is typically located at a location remote from the linear accelerator,” because the imager must be able to image during irradiation and therefore must be “associated with the linear accelerator.” (Elekta R. 77, Def.’s Br. at 15-16.) Elekta argues that “the figures in the patent *explicitly* show the imagers in the same location as the rest of the treatment device,” a fact it claims is “highly relevant” to claim construction. (Elekta R. 81, Def.’s Reply at 9) (citing *CVI/Beta Ventures, Inc. v. Tura LP*, 112 F.3d 1146, 1153 (Fed. Cir. 1997)). Additionally, Elekta argues that by requiring the imager to be capable of imaging “in the presence of high intensity radiation,” RSS’s construction implicitly requires the imager to be located in the treatment room. (*Id.* at 9-10.)

In response, RSS asserts that the quoted “key of the invention” uses the word “can” to

indicate a capability, not a requirement. (Brainlab R. 56, Pl.’s Resp. at 13-14; Elekta R. 80, Pl.’s Resp. at 13-14.) RSS quotes several passages from the specification that use words like “can,” “may,” and “allow” in reference to the imager’s ability to image the markers in the presence of other radiation. (Brainlab R. 56, Pl.’s Resp. at 13-14; Elekta R. 80, Pl.’s Resp. at 13-14.) RSS offers the proposed construction: “one or more devices capable of reproducing a visual representation in the presence of high intensity radiation and that are not confounded by the beam irradiating the target volume.” (Brainlab R. 56, Pl.’s Resp. at 13.) RSS contends that Brainlab’s and Elekta’s proposed constructions requiring that the imager image during irradiation are inconsistent with their constructions for dependent claim 10, which require the imager to be inactive during treatment. (*Id.* at 14; Elekta R. 80, Pl.’s Resp. at 14.) Additionally, RSS takes issue with Elekta’s construction requiring the imager to be “positioned on the treatment system.” (Elekta R. 80, Pl.’s Resp. at 14.) RSS argues first that claim 1 does not impose any structural requirements on the imager, and second that the ‘848 Patent never refers to a treatment system. (*Id.*)

Brainlab argues that RSS’s construction describes an imager “which is merely ‘capable of’ satisfying the key for the invention—*not actually accomplishing it*,” because the invention requires the imager to actually produce images during radiation. (Brainlab R. 55, Defs.’ Br. at 17.) Similarly, Elekta argues that the claim “requires ‘*an imager which images*,’ not ‘an imager which is merely capable of imaging’ in the presence of high intensity radiation.” (Elekta R. 81, Def.’s Reply at 8.) Elekta and Brainlab both insist that their constructions are consistent with claim 10. (Brainlab R. 57, Defs.’ Reply at 13-14; Elekta R. 81, Def.’s Reply at 9 n.4.)

RSS also contends that “an imager” should be construed as “one or more imagers.”

(Brainlab R. 56, Pl.'s Resp. at 16) (citing *Baldwin Graphic Sys., Inc. v. Siebert, Inc.*, 512 F.3d 1338, 1342 (Fed. Cir. 2008) for the proposition that an indefinite article means "one or more" in open-ended claims). If "an imager" is construed to mean "one imager," claim 3, which explicitly discloses an imager that comprises two x-ray imagers and two x-ray sources, becomes nonsensical. (*Id.* at 16-17.) Brainlab agrees with RSS that the "imager" may be comprised of more than one device, but "requires that whatever specific imaging device generates the initial imager output signal, that same imaging device must also generate the subsequent imager output signal." (Brainlab R. 57, Defs.' Reply at 12.)

Finally, RSS argues that Brainlab's construction "improperly limits an imager to a configuration that includes 'a radiation source.'" (Brainlab R. 56, Pl.'s Resp. at 15.) RSS contends that the specification supports the differentiation between the claimed imager and a source. (*Id.*) (citing '848 Pat. at 4:19-22). RSS argues that the doctrine of claim differentiation supports its construction because dependent claim 3 describes an embodiment which specifies an imager comprising x-ray sources and x-ray imagers. (*Id.*) (quoting '848 Pat. at cl. 3.) RSS quotes *Retractable Technologies, Inc. v. Becton Dickinson & Co.*, 653 F.3d 1296, 1312 (Fed. Cir. 2011), to support its position that "the presence of a dependent claim that adds a particular limitation gives rise to a presumption that the limitation in question is not present in the independent claim," and that this presumption is "especially strong when the limitation in dispute is the only meaningful difference between an independent and dependent claim." (Brainlab R. 56, Pl.'s Resp. at 15.)

The Court notes that the limitation in dispute, that the imager includes a radiation source, is *not* the only meaningful difference between claim 1 and claim 3. However, Brainlab offers no

support for the part of its proposed construction that requires the imager to “includ[e] a radiation source and a radiation imager,” and the Court finds no support in the claim or specification for that construction. *See Markman*, 52 F.3d at 979.

Additionally, the Court finds no indication in either the claim or the specification that the imager must image during radiation treatment. Elekta is correct that the claim discloses “an imager which images,” not “an imager which is capable of imaging,” but the rest of the claim does not mention or even hint at therapeutic radiation. Thus, Elekta’s statement that “the claim at issue requires ‘*an imager which images*,’ not ‘an imager which is merely capable of imaging’ in the presence of high intensity radiation” is seriously misleading. (Elekta R. 81, Def.’s Reply at 8.) Requiring the imager to *only* image in the presence of high intensity radiation is a limitation not supported by the plain language of the claim. The specification repeatedly refers to the invention as having the capability to operate in the presence of irradiation, but never suggests it may only do so. Defendants point to no intrinsic evidence that would support reading a limitation that the claimed system only operate in the presence of therapeutic radiation into a claim that does not mention radiation. *See Comark Comm’ns, Inc. v. Harris Corp.*, 156 F.3d 1182, 1186-87 (Fed. Cir. 1998) (declining to use the specification to limit a clear and well-defined claim term). The Court agrees with RSS that requiring the imager to always image during radiation nullifies dependent claim 10, which calls for the system in claim 1 to be “pulsed so that the system is active between pulses of radiation not associated with the imager.” ‘848 Pat. at cl. 10. Adopting Defendants’ proposed constructions would require the system (which includes the imager) to function during irradiation and prevent claim 10 from being feasible. Nothing in the plain language of the patent suggests that the Court should depart from giving

dependent claim 10 its clear meaning, so the Court declines to limit claim 1 in a way that would exclude the embodiment in claim 10. *See AK Steel Corp. v. Sollac & Ugine*, 344 F.3d 1234, 1241-42 (Fed. Cir. 2003) (finding that the independent claim must be interpreted to allow the embodiment described in a dependent claim); *Robotic Vision Sys., Inc. v. View Eng'g, Inc.*, 189 F.3d 1370, 1375 (Fed. Cir. 1999) (holding that “the limitations in claims 11 and 12, as dependent claims of claim 1, must be included in claim 1 as well”); *MEMS Tech. Berhard v. Int'l Trade Comm'n*, 447 F. App'x 142, 150-51 (Fed. Cir. 2011) (rejecting a proposed claim construction that “would without justification exclude embodiments in the specification”) (non-precedential). However, because the specification makes clear that the purpose of the imager is to *be capable of* imaging during radiation, the imager must be positioned in the treatment room so that it can be used to that end.

The Court thus construes “an imager which images” as follows: one or more devices located in the treatment room that produce both an initial imager output signal and a subsequent imager output signal, and that are capable of producing images of the markers in the presence of high intensity radiation and are not confounded by the beam irradiating the target volume.

B. imager output signal

To define “imager output signal,” Brainlab offers the construction: “one or more images generated by the imager sufficient for the data processor to compute three-dimensional data,” stressing that every embodiment requires the imager to “produce information from which the data processor can determine the *three-dimensional* positions of the markers.” (Brainlab R. 55, Defs.’ Br. at 18) (citing ‘848 Pat. at 3:25-33). For the full phrase “imager output signal which is functionally related to . . . set of positions of the markers relative to the external coordinates,”

Elekta proposes the following construction: “one or more signals produced by the imager containing data from which the three-dimensional coordinates of the markers relative to the coordinate system in the treatment room are computed.” (Elekta R. 81, Def.’s Reply at 11.)

Elekta offers reasoning for its construction that is similar to Brainlab’s rationale—to clarify that the purpose of the imager output signal is to locate the target volume relative to external coordinates. (Elekta R. 77, Def.’s Br. at 16.) For the reasons discussed above with regards to “markers,” Elekta contends that the imager output signal must relate to the three-dimensional coordinates of the markers. (Elekta R. 81, Def.’s Reply at 11.)

RSS contends that no claim construction is necessary for the term “imager output signal.” (Brainlab R. 56, Pl.’s Resp. at 17; Elekta R. 80, Pl.’s Resp. at 16.) RSS avers that Defendants “replac[e] straightforward and easily understood claim language with cumbersome limitations that change the meaning and scope of the claim.” (Brainlab R. 56, Pl.’s Resp. at 17; Elekta R. 80, Pl.’s Resp. at 16.) First, RSS argues that “one or more images” is an improper limitation of “signal.” (Brainlab R. 56, Pl.’s Resp. at 17.) RSS contends that “one of ordinary skill in the art would recognize that a ‘signal’ should not be limited to ‘images,’ and directs the Court to consider the definition of “signal” found in the *McGraw-Hill Dictionary of Scientific and Technical Terms*. (*Id.* at 18.) Next, RSS contends that “Brainlab replaces the easily understandable claim language” of “produces” with “generated by,” and that such a substitution is unnecessary. (*Id.*) Finally, RSS argues that Defendants’ constructions requiring three-dimensional data improperly limits the claim. (*Id.* at 19; Elekta R. 80, Pl.’s Resp. at 17-18.) The arguments made by both RSS and Defendants on this issue are nearly identical to the arguments made with regards to “external coordinates” in the “markers” provision addressed above.

For the reasons stated previously with regards to “markers,” the Court rejects RSS’s attempt to broaden the claim beyond the scope of the patent by interpreting the one-directional movement embodied in claim 14 to require less data about the location of the markers. The Court does, however, find the rest of the term to be straightforward. The word “signal” has a meaning which is readily apparent to a person of skill in the art, and the Court relies on a technical dictionary to give “signal” its appropriate meaning. *See Phillips*, 415 F.3d at 1314. The dictionary definition of “signal” does not support the limitation Defendants propose.² There does not seem to be any material dispute over the meaning of “functionally related,” and there is no indication that this specific term will be material to the disputed issues of the litigation, so the Court declines to further define “functionally related.” *See Hakim v. Cannon Avent Grp., PLC*, 479 F.3d 1313, 1318-19 (Fed. Cir. 2007); *K-2 Corp. v. Salomon S.A.*, 191 F.3d 1356, 1363 (Fed. Cir. 1999). The Court thus construes “imager output signal which is functionally related to . . . set of positions of the markers relative to the external coordinates” as follows: a visual, aural, or other indication which is produced by the imager and transmitted to the data processor, and which is functionally related to the three dimensional coordinates of the markers relative to the external coordinate system.

C. initial time; subsequent time

Because Brainlab and Elekta propose constructions for these two terms that are virtually identical, the Court will address Brainlab’s proposal with the understanding and intention that the analysis applies equally to Elekta’s substantially identical proposed construction. (Brainlab R.

² “Signal” is defined as “a visual, aural, or other indication used to convey information.” *McGraw-Hill Dictionary of Scientific and Technical Terms*. (Brainlab R. 56, Pl.’s Resp., Ex. B; Elekta R. 80, Pl.’s Resp. at 17, Ex. A.)

55, Defs.' Br. at 18); *see also* (Elekta R. 77, Def.'s Br. at 17). Brainlab proposes that "initial time" should be construed as: "a time when the target volume is located at the desired position relative to the therapeutic irradiating beam." (Brainlab R. 55, Defs.' Br. at 18.) Defendants argue that because the system "inevitably functions to return the target volume to whatever position it was in at the initial time," "the construction of the 'initial time' must include the fact that the target volume is at the desired position" at that time. (Brainlab R. 55, Defs.' Br. at 19); *see also* (Elekta R. 77, Def.'s Br. at 17). Defendants cite the patent's intention to "move the body to counter motion of the target volume between the initial time and the subsequent time thus stabilizing the target volume relative to the external coordinates" to support their conclusion. (Brainlab R. 55, Defs.' Br. at 19) (quoting '848 Pat. at 3:43-46).

Brainlab proposes that "subsequent time" thus be construed as: "a time after the initial time and during the therapeutic irradiation." (Brainlab R. 55, Defs.' Br. at 20); *see also* (Elekta R. 77, Def.'s Br. at 17). Brainlab contends that if the subsequent time is not during the irradiation, "it would not be a 'key for this invention' that the imager 'not be confounded by other radiation present.'" (Brainlab R. 55, Defs.' Br. at 20) (quoting '848 Pat. at 3:65-67). Brainlab accuses RSS of using its construction to "attempt[] to strip the claims of their context and the invention." (Brainlab R. 57, Defs.' Reply at 14.)

RSS argues that these phrases do not require construction. (Brainlab R. 56, Pl.'s Resp. at 19; Elekta R. 80, Pl.'s Resp. at 19.) RSS reiterates that the position of the target volume is defined relative to external coordinates, not the therapeutic irradiating beam. (Brainlab R. 56, Pl.'s Resp. at 19) (quoting '848 Pat. at cl. 1). Additionally, RSS observes that nothing in the patent indicates that the subsequent signal must be produced "during therapeutic irradiation."

(*Id.*; Elekta R. 80, Pl.’s Resp. at 20.)

The Court agrees with RSS that “claim 1 uses these terms in a straightforward manner to describe the relationship between ‘an initial set of positions of the markers’ and ‘a subsequent set of positions of the markers.’” (Elekta R. 80, Pl.’s Resp. at 19.) The specification directly contradicts the limitation Defendants wish to impose upon “initial time,” namely that it is when the target volume is at the desired location:

[W]hen the imager images the set of positions of the markers at some initial time, the initial imager output signal will be functionally related to the reference set of positions (providing that the spatial relationship of the reference set of positions of the markers to the target volume has not changed in the time between the calibration and the initial time). This initial imager output signal can be used to control the initial alignment of a process in the body such as radiation therapy aimed at the target volume.

‘848 Pat. at 5:26-34. Because the specification contemplates that the initial signal at the initial time might need to be used to position the body or target volume to the desired location, “initial time” cannot include a limitation that requires the target volume to already be in the desired location. Defendants’ proposed limitations are unpersuasive, and the Court thus concludes that the terms “initial time” and “subsequent time” are straightforward and do not require construction.

IV. control output signal

Defendants ask the Court to construe the claim 1 term “control output signal.” (Elekta R. 77, Def.’s Br. at 18; Brainlab R. 55, Defs.’ Br. at 20.) Brainlab proposes the construction:

a signal produced by the data processor based on the comparison of the marker positions from the initial imager output signal and from the subsequent imager output signal that directs the actuators to move the target volume during therapeutic irradiation to the desired position relative to the therapeutic irradiating beam.

(Brainlab R. 55, Defs.' Br. at 20.) Brainlab relies on its deposition of the inventor to support its claim that the entire purpose of the invention is to accomplish stabilization during irradiation. (*Id.* at 21) (quoting Reiffel as saying that being able to position the patient with the beam on is "one of the major features" of the invention, *id.*, Ex. 4, Rieffel Dep. at 172.) "As such, the control signal must direct the actuators to move the target volume *during therapeutic irradiation* to the desired position." (Brainlab R. 55, Defs.' Br. at 21) (internal quotations omitted). Elekta proposes a similar construction: "a signal that (1) is produced by the data processor based on a comparison of the initial imager output signal and the subsequent imager output signal and (2) directs the actuator sub-system to move the target volume during therapeutic irradiation to the desired location." (Elekta R. 77, Def.'s Br. at 18.) Elekta contends that the plain language of the patent discloses a system that produces a "control output signal" that moves the body such that the target is stabilized relative to the treatment beam. (*Id.*) (citing '848 Pat. at 1:54-58). Elekta argues that because "[t]he final element of claim 1 specifies that the control output signal moves the body," the control signal must direct the patient bed's movement to stabilize the target volume relative to the treatment beam." (Elekta R. 77, Def.'s Br. at 19.) Additionally, Elekta argues that because the purpose of the invention is to "reposition[] the patient bed in real time," the control output signal must be created during therapeutic irradiation. (Elekta R. 81, Def.'s Reply at 12.)

Defendants rely on the language of the patent to support their contentions that the signal is based on a comparison of marker positions: ". . . an imager output signal so that a data processor can distinguish reliable images of the markers in order to compare subsequent images

of sets of positions of the markers and generate control signals . . .” ‘848 Pat. at 5:1-4 (quoted in Brainlab R. 57, Defs.’ Reply at 15); *see also* (Elekta R. 77, Def.’s Br. at 18-19).

RSS contends that the term does not need to be construed. (Elekta R. 80, Pl.’s Resp. at 20; Brainlab R. 56, Pl.’s Resp. at 21.) RSS argues that the plain language of the claim specifies that the imager output signals, not the marker positions, are compared to produce a control output signal. (Brainlab R. 56, Pl.’s Resp. at 21.) RSS further reiterates its argument that nothing in the claims or the specification supports the limitations that the invention only be able to move the target volume during therapeutic irradiation or that the target volume be moved in relation to the treatment beam. (*Id.*; Elekta R. 80, Pl.’s Resp. at 20.)

The Court finds the plain language of the limitation and the context of the other limitations in the claim sufficient to inform the construction of the term “control output signal.” *See Phillips*, 415 F.3d at 1314. The Court construes the term as follows: a signal based on a comparison of the initial imager output signal and a subsequent imager output signal that drives the actuator sub-system to move the body and is capable of doing so in the presence of high intensity radiation.

V. . . . imaged distances between markers are magnified by the imager.

The next term the parties ask the Court to construe is in dependent claim 9: “The device of claim 1 wherein imaged distances between markers are magnified by the imager.” ‘848 Pat. at cl. 9. Brainlab’s proposed construction for the part of the claim following “wherein” is: “the distances between the markers as they appear in the images generated by the imager are greater than the actual distances between the markers in the body.” (R. 55, Defs.’ Br. at 22.) Brainlab argues that its construction “is consistent with the plain language of claim 1 and the

specification.” (*Id.*) (citing ‘848 Pat. at 4:6-11.) Elekta’s proposed construction is virtually identical. (Elekta R. 77, Def.’s Br. at 19.) Elekta explains that its construction is necessary to understand which of the two possible types of image magnification is referenced by the claim. (*Id.*) It explains that the first type of magnification is created by increasing the distance between the source of the image and the object being imaged (like a flashlight casting a shadow). (*Id.*) The second type of magnification involves “blowing up” or “zooming in on” an image so that the proportions of the image are maintained but the distances are increased. (*Id.* at 20.) Elekta contends that the magnification referred to in claim 9 is of the former variety and is created by adjusting the relative positions of the x-ray source, body, and x-ray image. (*Id.* at 19-20.) Elekta relies on the following sentence from the patent to support its construction: “The beam vector pairs . . . originate from spots as small as 10 microns so that distances between the markers, can be magnified by a factor as large as five and larger.” ‘848 Pat. at 8-11. Additionally, Elekta argues that “the claim language says the ‘imaged’ distances are magnified in the ‘images generated by the imager,’ not some later zoomed version of the image.” (Elekta R. 77, Def.’s Br. at 20.)

RSS argues that Defendants have ignored the language of the claim, which specifies that the *imaged* distances, not the actual distances, are magnified. (Brainlab R. 56, Pl.’s Resp. at 22; Elekta R. 80, Pl.’s Resp. at 21.) RSS also contends that “magnified” is a readily understandable term that Defendants’ constructions unnecessarily complicate. (*Id.*) Additionally, RSS clarifies that the imager does not necessarily produce images, but is only required by the claim to produce output signals, and that to require it to produce images is improper. (Brainlab R. 56, Pl.’s Resp. at 22-23; Elekta R. 80, Pl.’s Resp. at 22.) RSS proposes the term be construed as: “the distance

between the markers on the image are magnified by the imager.” (Brainlab R. 56, Pl.’s Resp. at 22; Elekta R. 80, Pl.’s Resp. at 21.)

Defendants have misread the claim. The plain language of claim 9 only requires that the “imaged distances between markers are magnified by the imager.” ‘848 Pat. at cl. 9. It does not specify how the distances are magnified, and it contains no support for the additional limitations Defendants wish to impose. The Court finds claim 9 readily understandable. However, because Defendants seem to need clarification, the Court construes “imaged distances between markers are magnified by the imager” as follows: the distances between the markers on the images produced by the imager are magnified by the imager.

VI. . . . the system is pulsed so that the system is active between pulses of radiation not associated with the imager.

The parties next ask the Court to construe dependent claim 10: “[t]he device of claim 1 wherein the system is pulsed so that the system is active between pulses of radiation not associated with the imager.” ‘848 Pat. at cl. 10. Brainlab, contending that the system as disclosed in claim 1 comprises more than just the imager, proposes the following construction: “the imager, data processor, and the actuator subsystem are active and inactive at periodic intervals of a selected frequency matching the inactive and active periodic intervals of the therapeutic irradiating beam, respectively.” (Brainlab R. 55, Defs.’ Br. at 22.) Elekta emphasizes that in order to be pulsed, the imager must *only* be on when the treatment beam pulse is off. (Elekta R. 77, Def.’s Br. at 21.) Elekta proposes the term be construed as: “the imager is turned on and off at short regular intervals so that the imager is on and produces images only during the off phases of the treatment beam pulses.” (*Id.*)

RSS argues that requiring the system to be inactive when the therapeutic beam is active is “beyond the clear meaning of the claim.” (Brainlab R. 56, Pl.’s Resp. at 23; Elekta R. 80, Pl.’s Resp. at 22.) RSS contends that the claim only requires the system to be *active* between pulses, but does not require any corresponding period of inactivity. (Elekta R. 80, Pl.’s Resp. at 22.) RSS also argues that Elekta’s use of the term “on” is unnecessary and more vague than the claim’s term “active.” (*Id.* at 22-23.) RSS proposes claim 10 be construed as: “the imager, data processor, and the actuator subsystem are active at periodic intervals of a selected frequency matching the inactive periodic intervals of the therapeutic beam.” (*Id.* at 22; Brainlab R. 56, Pl.’s Resp. at 23.)

In response, Elekta argues that RSS’s construction leaves no differentiation between claim 1 and claim 10. (Elekta R. 81, Def.’s Reply at 13.) If the system is not required to be on while the treatment beam is off, then both claim 1 and claim 10 allow imaging to take place during radiation pulses and also in between radiation pulses. (*Id.*)

The Court agrees with Elekta’s analysis of RSS’s construction. The plain meaning of “active between pulses of radiation” includes the inference of inactivity during the pulses of radiation. If the system is not inactive when the treatment beam is active, there is no need to use the word “between”;³ the claim would simply describe the system working *while* the treatment beam pulsed. This embodiment is included in independent claim 1. “[I]ndependent claims are presumed to have broader scope than their dependents,” *Acumen LLC v. Stryker Corp.*, 483 F.3d

³ “Between” is defined by the Merriam-Webster Online Dictionary as “in the time, space, or interval that separates.” The Court finds the word “separates” in the definition to be exclusive. Notably, the examples of “between” given by the dictionary include “[t]he two days between Monday and Thursday are Tuesday and Wednesday.”

800, 806 (Fed. Cir. 2007), so a construction of dependent claim 10 that makes it as broad as independent claim 1 is incorrect. *See CytoLogix Corp. v. Ventana Med. Sys., Inc.*, 424 F.3d 1168, 1173 (Fed. Cir. 2005) (“An interpretation of one claim that renders another claim meaningless is disfavored.”). The Court also agrees with Brainlab’s assessment that the “system” described in claim 10 includes all components of claim 1, not just the imager. Accordingly, the Court adopts Brainlab’s proposed construction of claim 10. Therefore, the Court construes “. . . the system is pulsed so that the system is active between pulses of radiation not associated with the imager” as follows: the imager, data processor, and the actuator subsystem are active and inactive at periodic intervals of a selected frequency matching the inactive and active periodic intervals of the therapeutic irradiating beam, respectively. (Brainlab R. 55, Defs.’ Br. at 22.)

VII. . . . supplementary control signal for a control system to control a process in the body.

Finally, Brainlab requests a construction of a phrase in dependent claim 11, which is: “[t]he device of claim 1 wherein the data processor produces a supplementary control signal for a control system to control a process in the body.” ‘848 Pat. at cl. 11. Specifically, Brainlab seeks to construe “a supplementary control signal, to control a process in the body.” Brainlab contends that the patent implies that the supplemental control signal is produced by the data processor in the same manner as the control output signal. (Brainlab R. 55, Defs.’ Br. at 24.) Accordingly, Brainlab’s proposed construction is: “a signal produced by the data processor based on the comparison of the marker positions from the initial imager output signal and from the subsequent imager output signal that, based on the comparison, re-orient, re-shapes or pulses an irradiating

beam.” (*Id.* at 23.) Brainlab argues that RSS’s proposed construction “appears to cover any control signal no matter how created, even if having nothing to do with the imager or the initial and subsequent output signals.” (*Id.* at 24.)

Neither Elekta nor RSS believe that a construction is necessary. (Elekta R. 81, Def.’s Reply at 14.) RSS offers a proposed construction as an alternative to Brainlab’s: “a supplementary control signal to control a property of the treatment occurring in the target volume.” (Brainlab R. 56, Pl.’s Resp. at 24.) RSS argues that only allowing the supplemental control signal to re-orient, re-shape, or pulse an irradiating beam is too limiting. (*Id.* at 25.) Additionally, RSS argues that Brainlab’s construction excludes the embodiment of claim 11; but RSS has to make several leaps in logic to get there: (1) the specification describes countering strain as one intended use of the supplementary control signal; (2) the specification explains that the actuator sub-system cannot counter strain motion; (3) therefore, the supplementary control signal in claim 11 is entirely independent of the actuator sub-system; (4) claim 1 provides that the actuator sub-system is driven by the control output signal; (5) claim 1 further provides that the control output signal is produced through comparing the initial and subsequent imager output signals; (6) therefore, the supplementary control signal is not produced through comparing the initial and subsequent imager output signals. (*Id.* at 24-25.)

The Court declines to follow the logical fallacy RSS urges the Court to adopt. The fact that the supplementary control signal does not drive the actuator sub-system in certain instances does not mean that it is not produced by the same means as the control output signal. Terms found in different claims must be interpreted consistently. *Georgia-Pacific Corp. v. U.S. Gypsum Co.*, 195 F.3d 1322, 1331, (Fed. Cir. 1999). Although “supplementary control signal” is

not identical to “control output signal,” the specification clearly indicates that the data processor produces the supplementary control signal using the same means and information it uses to produce the control output signal:

In the case of the translation and rotation, the control signal can drive the actuator sub-system to move the body to counter the translation and rotation to stabilize the target volume relative to external coordinates. The data processor can also generate a supplementary control signal (not shown) for a separate control system (not shown) to control a process in the body . . .

‘848 Pat. at 5:46-52. In the portion of the specification that discusses the strain motion RSS refers to, it states: “[h]ere the data processor can calculate a best fit to the relative motions [of the markers] (perhaps also utilizing information about the properties of the body and the target volume) to generate a supplementary control signal[.]” ‘848 Pat. at 5:65-6:1. To calculate a best fit to the relative motions of the markers, the data processor requires information about the markers’ positions. The parenthetical phrase suggests that the initial and subsequent imager output signals may not be the *only* information that is used to determine the markers’ positions but gives no indication that they are not be used. Thus, the Court finds that the construction of the supplementary control signal should closely follow the construction of control output signal. *See Southwall Techs., Inc. v. Cardinal IG Co.*, 54 F.3d 1570, 1579 (Fed. Cir. 1995) (“Interpretation of a disputed claim term requires reference not only to the specification and prosecution history, but also to other claims.”).

However, the Court agrees with RSS that construing claim 11 to only allow for re-orienting, re-shaping, and pulsing the therapeutic beam is too limiting. While claims must be read in light of the specification, *see Markman*, 52 F.3d at 979, “limitations from the specification are not to be read into the claims,” *Teleflex*, 299 F.3d at 1326. *See Playtex Prods.*,

Inc. v. Procter & Gamble Co., 400 F.3d 901, 906 (Fed. Cir. 2005) (“The court must take care in its analysis, when locating in the written description the context for a disputed term, not to import a limitation from that written description. It must use the written description for enlightenment and not to read a limitation from the specification.”). The specification gives no indication that the examples it provides for the uses of the supplementary control signal are the only uses covered by claim 11. Accordingly, the Court construes “a supplementary control signal to control a process in the body” as follows: a signal produced by the data processor based on the comparison of the initial imager output signal and a subsequent imager output signal that controls a process in the body based on the comparison.

CONCLUSION

The claim terms of the ‘848 Patent are construed in accordance with the constructions set forth above. This lawsuit is set for a status hearing on October 25, 2012 at 9:45 a.m. to set a litigation schedule for this lawsuit, including a firm trial date. The parties are directed to reevaluate their settlement positions and exhaust all settlement possibilities in light of this opinion.

ENTERED: 

Judge Ruben Castillo

United States District Court

Dated: October 5, 2012